

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 874. (No. 39, Vol. XVII.)

SEPTEMBER 24, 1925

Weekly, Price 6d.
Post free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.
Telegrams: Truditor, Westcent, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free:

United Kingdom .. 30s. 4d. Abroad .. 33s. 0d.*

These rates are subject to any alteration found necessary under abnormal conditions and to increases in postage rates

* Foreign subscriptions must be remitted in British currency

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1925

- Sept. 19-28 F.I.A. Conference at Prague.
- Sept. 27-Oct. 7 "On to New York" Contest.
- Sept. 27-Oct. 10 American "National Aviation Meet," Mitchel Field, Long Island, N.Y.
- Sept. 28 Ford Trophy, Detroit, U.S.A.
- Oct. 1 Maj.-Gen. Sir Sefton Brancker, K.C.B., A.F.C. "The Technical Lesson of Five Years of Air Transport," before R.Ae.S.
- Oct. 8 Aero Golfing Soc. Autumn Meeting, Walton Heath.
- Oct. 10 Pulitzer Trophy, Long Island, U.S.A.
- Oct. 15 Maj. C. K. Cochran-Patrick, D.S.O., M.C. "Aircraft Survey in Burma," before R.Ae.S.
- Oct. 24-29 Schneider Cup Race, Baltimore, U.S.A.
- Oct. 29 Mr. W. L. Cowley. "Aircraft Transport Economy," before R.Ae.S.
- Nov. 3 Sir Dugald Clerk, K.B.E., F.R.S., D.Sc., M.I.M.E., M.I.C.E., F.R.Ae.S. "Super-charging," before R.Ae.S.
- Nov. 4 Group-Capt. W. F. MacNeece. "The General Principles of Air Defence," before Royal United Service Institution.

EDITORIAL COMMENT.



WHEN the Atlantic Transport Company's "Minnewaska" leaves the London docks on Saturday of this week, she will have with her some "freightage" very precious to the British aviation world—namely, the racing machines, their crews, and other members of the British team for the Schneider Cup Seaplane Race. It is gratifying to be able to record this fact, since never before in the history of British aviation has this country sent out challengers so well prepared and backed by such excellent organisation as has been instituted in connection with sending over our representatives to the United States for this year's race at Baltimore. In addition to the pilots and crews of the machines, representatives of the aircraft and engine firms, etc., the Royal Aero Club will be represented at the Race, as also the Air Ministry. When one compares this with the magnificent effort of the Supermarine Aviation Works at Naples in 1922, when Biard won the Cup for Great Britain, at which neither the Air Ministry nor the Royal Aero Club was represented, there is good reason to feel satisfied this year. Capt. C. B. Wilson, M.C., as the official representative of the Royal Aero Club, will be captain of the British team in place of Lord Edward Grosvenor, who is prevented from captaining the team. That the British leadership will be in good hands there is every reason to believe, and Capt. Wilson's first act upon being nominated Captain of the British team was to form a Committee upon which the two competing British aircraft firms, the Napier engine firm, and the Air Ministry are represented. Thus, should a dispute arise, through any cause whatsoever, this Committee would be in a position effectively to tackle it and to take any steps that may be necessary.

With reference to the British challengers and their chances; since writing upon this subject last week we have had an opportunity of inspecting both machines, and, after doing so, we feel more confident than ever that Great Britain will, at any rate, have

a sporting chance this year. In a short speech made by Commander James Bird during the visit to the Southampton Works, he strongly emphasised the fact that the British machines would not attain the speeds with which some machines had been credited in certain quarters, such as 270 m.p.h., but he did feel confident, in spite of the undoubtedly excellent qualities of the American defenders, that the British machines would stand a chance. It was not, Commander Bird said, going to be a "walk-over" by any means, but, barring accidents, he felt that the British machines would put up a very good fight. This tallies precisely with our own feelings on the subject, and we are quite sure that, whether the Cup comes back to this country or not, the performances put up by the British machines will be such as to be a credit to the British aircraft industry.

A fact which may play a very important part in the decision of the race will be the question of cornering. The course over which the Schneider Cup Race is to be flown is a triangular one of 50 kms. (31.1 miles), and is to be covered seven times, so that some 19 or 20 turns will have to be made. With the high speeds attained by these modern racing machines the physical effect on the pilots in cornering may be very serious, and we believe that it is almost impossible to take machines around sharp corners at more than 200 m.p.h. without the pilot feeling giddy and dazed owing to the fact that, in a steeply-banked turn, centrifugal force tends to drain the blood from the pilot's head. If, therefore, 200 m.p.h., or some such figure, represents the maximum speed at which the machine can safely be taken round corners, there will not be a very great advantage in having machines which will do over 250 m.p.h., since the machines will have to be slowed down some time before reaching the corners, and will have to accelerate again after rounding the corners, especially as probably the average time taken for each leg of the course will be only from two to three minutes. It is therefore quite possible that a machine with a top speed in straight flight of 240 m.p.h. will do quite as well round the corners as will one having a top speed of 250 m.p.h., although, naturally, the faster machine should, with its lower resistance, be able to accelerate more quickly. This, however, works both ways, and the more efficient machine would take longer to slow down for the turn than would the less efficient machine, and to all appearances it would seem possible that actual top speed is not going to mean everything in the race.

Taking all these various factors into consideration, we feel confident that, even if the American machines should be a trifle faster than our own, the actual speeds round such a short triangular course should be about the same, and if that is so, the race looks like being a close one.

That our thoughts will be with the British representatives a great deal during the next month they may be assured, and may the hope that one or the other will bring home the cup, materialise.



Soviet Russia's Air Fleet

STEADY progress is, according to *The Times* correspondent, being made in the building up of a formidable air fleet in Russia. While it is true that much of Russia's air strength is on paper or in the extravagant speeches of Soviet politicians, Soviet Russia is nevertheless making every effort to create a very powerful air fleet. In July, 1925, they had 987 aero-

"Trade follows Records"

In a short speech made on the occasion of the press visit to the Felixstowe Air Station to inspect the Gloster-Napier III, Mr. David Longden mentioned a fact which is, we are afraid, only too often overlooked in this country. "I would incidentally add," Mr. Longden said, "that a British victory in the race would prove a matter of great importance also to the prosperity of the industry, for *trade follows records*." The italics are ours, and the sentence deserves to become the slogan of the British aircraft industry. The lamentable absence of any British world's record is a sad reflection on the way we manage things in this country, and seems to indicate that the fact, for it is undoubtedly a profound truth, is not generally appreciated in this country. Mr. Longden has always realised the vital importance of records, and his firm was for years the only one to go seriously into the design and construction of racing machines. Had other firms had the same outlook there would have been no need to abandon during the last two years the only international speed race to be held in this country, the Aerial Derby, and public interest, as well as international interest, in British aviation and British machines would have been considerably greater than it can be assumed to be at present. Mr. Longden thus deserves well of the British aviation community for calling attention to the importance of records, and it is sincerely to be hoped that our renewed effort this year in connection with the Schneider Cup Race will be found to mark a growing realisation of our duties as an air power.

Establishing world's records is a costly business, and cannot be effectively done without government assistance. If the truth of this statement be doubted, we have a very concrete and very striking example in France during the last two years or so. It is but a few years ago that the United States had managed to secure nearly all the world's records worth having, and France suddenly realised that her prestige was slipping away. The French Under-Secretary of State for Air, M. Laurent Eynac, who was always a strong believer in the utility of world's records, and who expressed the opinion once that world's records were "the publicity of a nation's aircraft industry," succeeded in obtaining sanction for substantial money prizes to be awarded to French constructors who built machines that brought back to France any of the records lost to America. What has been the result? It has been that to-day France again holds nearly all the world's records that count, such as the speed record, the duration record, the speed record over 1,500 and 2,000 km., etc.

The British Air Ministry has made an excellent start this year by ordering two racing machines for development work. Let us hope that this form of practical support will be continued and extended in the future. If that is done there is not the slightest doubt that British designers and constructors will prove equal to the task of producing machines capable of securing for Great Britain some of those records which are held by others.

planes and seaplanes on its active list. Of these 625 were observation machines, 296 were fighters, and 66 heavy bombers. The Soviet Air Fleet is organised in squadrons of 12 machines each, including four reserve machines. The whole fleet in July numbered 98 squadrons, few of which were up to establishment, stationed mostly in European Russia—32 in the Ukraine, 17 in the Caucasus, 17 in the Province of Moscow, 9 in Leningrad District and 5 in the Volga.

THE SCHNEIDER CUP SEAPLANE RACE

British Representatives Leaving on Saturday

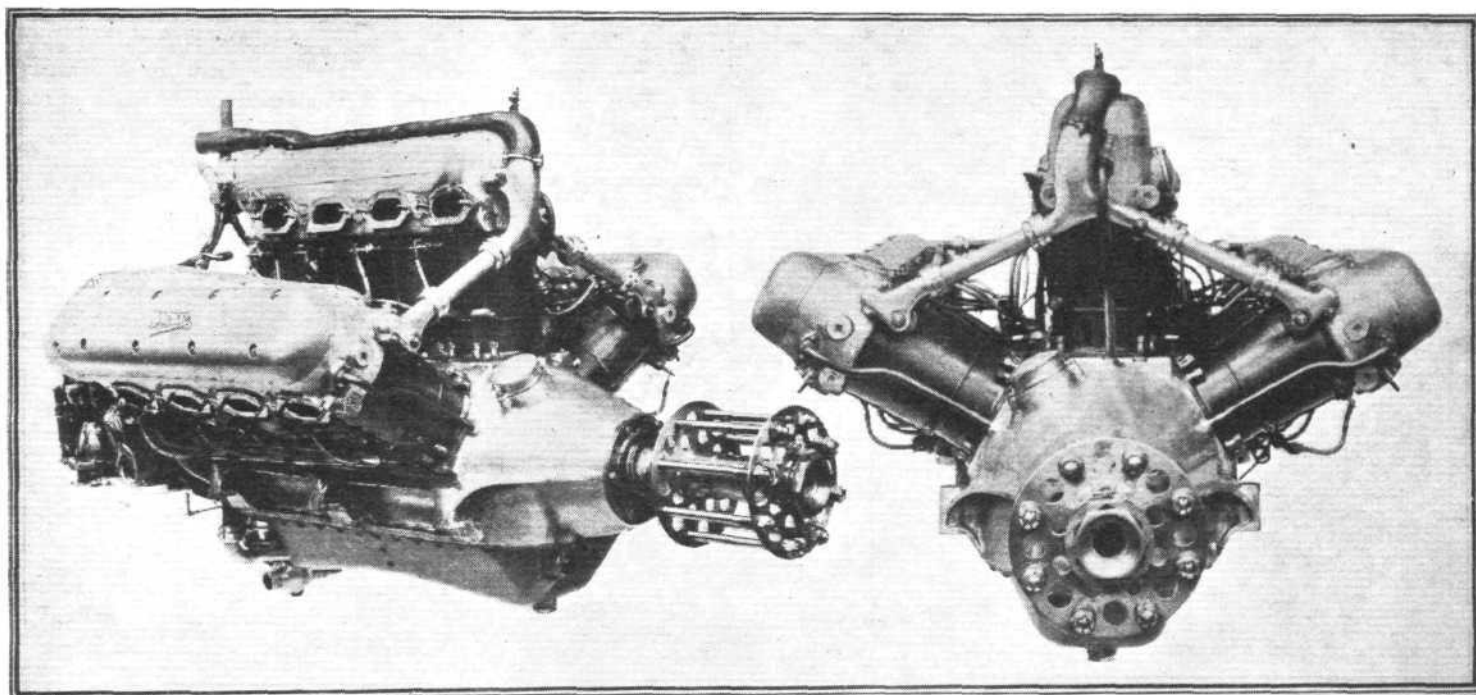
THE two British seaplane challengers built for this year's Schneider Cup Race at Baltimore having passed their Air Ministry tests, and having been definitely approved and permitted to go to the United States to represent Great Britain, it is now certain that this country will be represented by two machines in the forthcoming seaplane race. The British representatives and their machines are leaving London on Saturday of this week, September 26, on the s.s. "Minnewaska."

During last week representatives of the Press were permitted to see the racers, although it was not found possible to give demonstration flights. The Supermarine-Napier S.4 was inspected, at Southampton, on September 17, while the Gloster-Napier III was seen at Felixstowe seaplane station on September 18. Judging by appearances, the two British challengers should be very fast indeed—certainly very much faster than anything we have hitherto built in this country. Whether or not they will be sufficiently fast to bring the Cup back to this country remains to be seen. It

corresponding to an average speed of 139.7 kms./hr. (86.8 m.p.h.).

Owing to the War, no race was held until 1919, when, an English pilot having won the race in 1914, the Schneider Cup Race was held at Bournemouth. On the day of the race there was a thick mist over parts of the course at Bournemouth, particularly round the Swanage turning point, and all the competitors gave up with the exception of the Italian pilot, Janello, flying a Savoia flying-boat biplane. Janello covered the prescribed number of laps, but as he was not seen from the Swanage mark boat, there was considerable discussion as to whether or not he had properly completed the course. Finally it was decided to annul the race, but, as a compliment to Janello's pluck in flying round the course despite the adverse weather conditions, it was decided to award the Italian Aero Club the organisation of the race for the following year.

The 1920 Schneider Cup Race was held at Venice, and was won by the Italian pilot Bologna, who, on a Savoia flying-



THE SCHNEIDER CUP RACE: The British power plant. The Napier racing engine is a direct development of the famous "Lion," but these two views show that, apart from other changes, the racing engine has been considerably cleaned up so as to allow of a neat cowling being used. The power output is, of course, very considerably greater than that of the standard "Lion."

would be dangerous to be over-confident, but this much may, at any rate, be said, that the British challengers should this year have a sporting chance in the race, which, after all is said and done, is all that one has any right to expect.

HISTORY OF THE SCHNEIDER CUP RACE

Before describing the two British machines it may be helpful to give a brief history of the Schneider Cup Seaplane Race, from the time of its inception in 1913, up to the present day.

The Schneider trophy and substantial money prizes were first offered by Monsieur Jacques Schneider in 1913, when the first race for the trophy was held at Monaco. The distance to be flown in the first Schneider race was 150 nautical miles (172.83 land miles), or 278 kms. This race was won by the famous French pilot, Prevost, who was flying a Deperdussin monoplane with 150 h.p. Gnome engine. Prevost's time for the 278 kms. was 3 hours 48 mins. 28 secs.; corresponding to an average speed of 72.6 kms./hr. (45.75 m.p.h.). The 1914 Schneider Cup Race was also held at Monaco, and was over a total distance of 280 kms. The race was won easily by C. Howard Pixton, who was flying a Sopwith twin-float biplane with 100 h.p. Gnome Monosoupape engine. Pixton's time over the 280 kms. was 2 hrs. 0 mins. 13½ secs.,

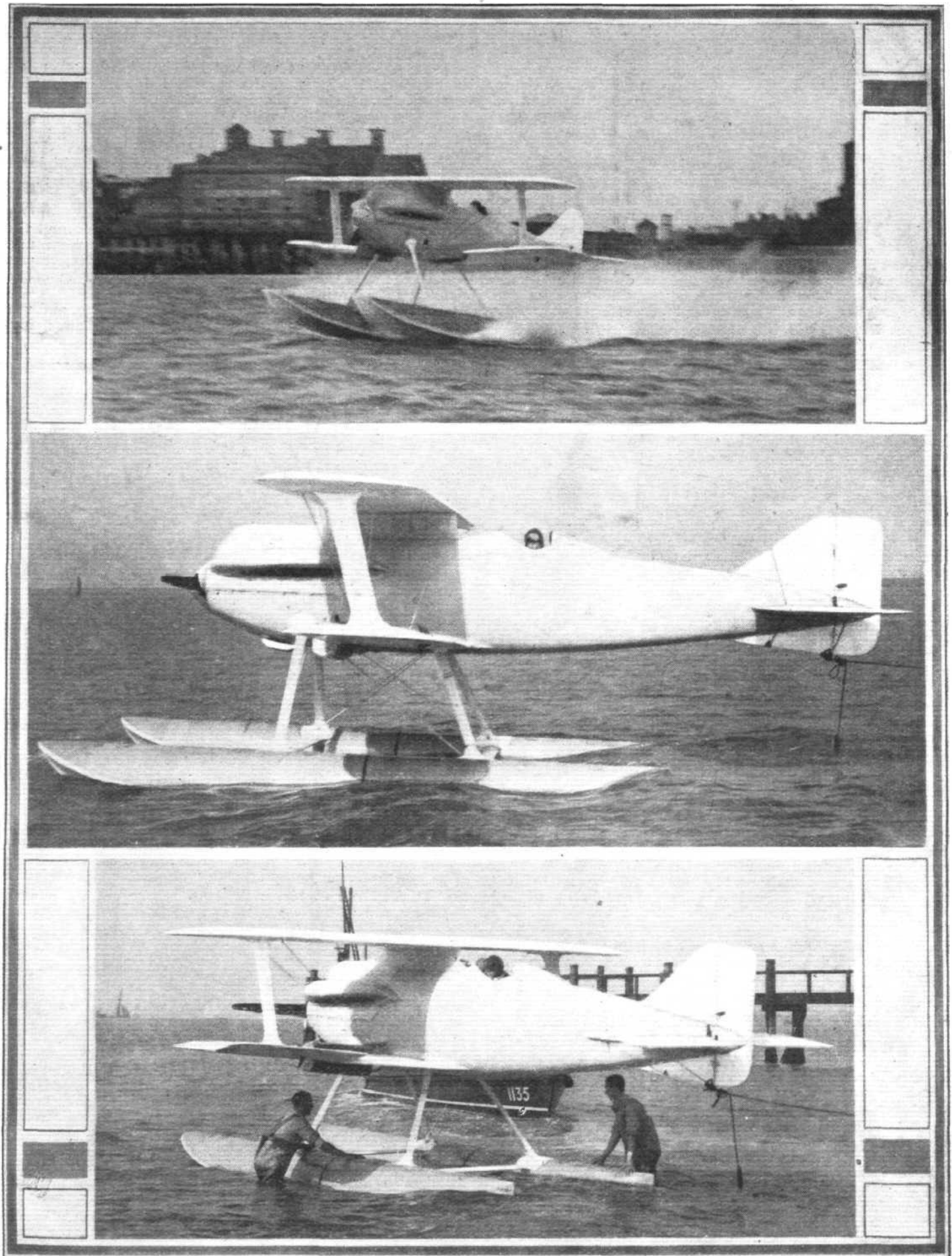
boat, covered the 375 kms. in 2 hrs. 10 mins. 35 secs., at an average speed of 172.3 kms./hr. (107 m.p.h.).

Venice was again chosen as the venue for the 1921 Schneider Cup Race, which was one of 370.4 kms. The race was again won by a Savoia flying boat, piloted by the Italian De Briganti, whose time was 2 hrs. 4 mins. 29 secs., corresponding to an average speed of 178.5 kms./hr. (111 m.p.h.).

For the 1922 Schneider Cup race a British machine was entered. If this race had been won by an Italian pilot the Schneider trophy would have become the property of Italy, as it would then have been won three years in succession. The Supermarine challenger, however, won a magnificent victory at Naples, piloted by Captain H. C. Biard. The Supermarine boat, which was fitted with a Napier "Lion" engine, covered the distance of 370 kms. in 1 hr. 34 mins. 51½ secs., at an average speed of 234.6 kms./hr. (145.7 m.p.h.).

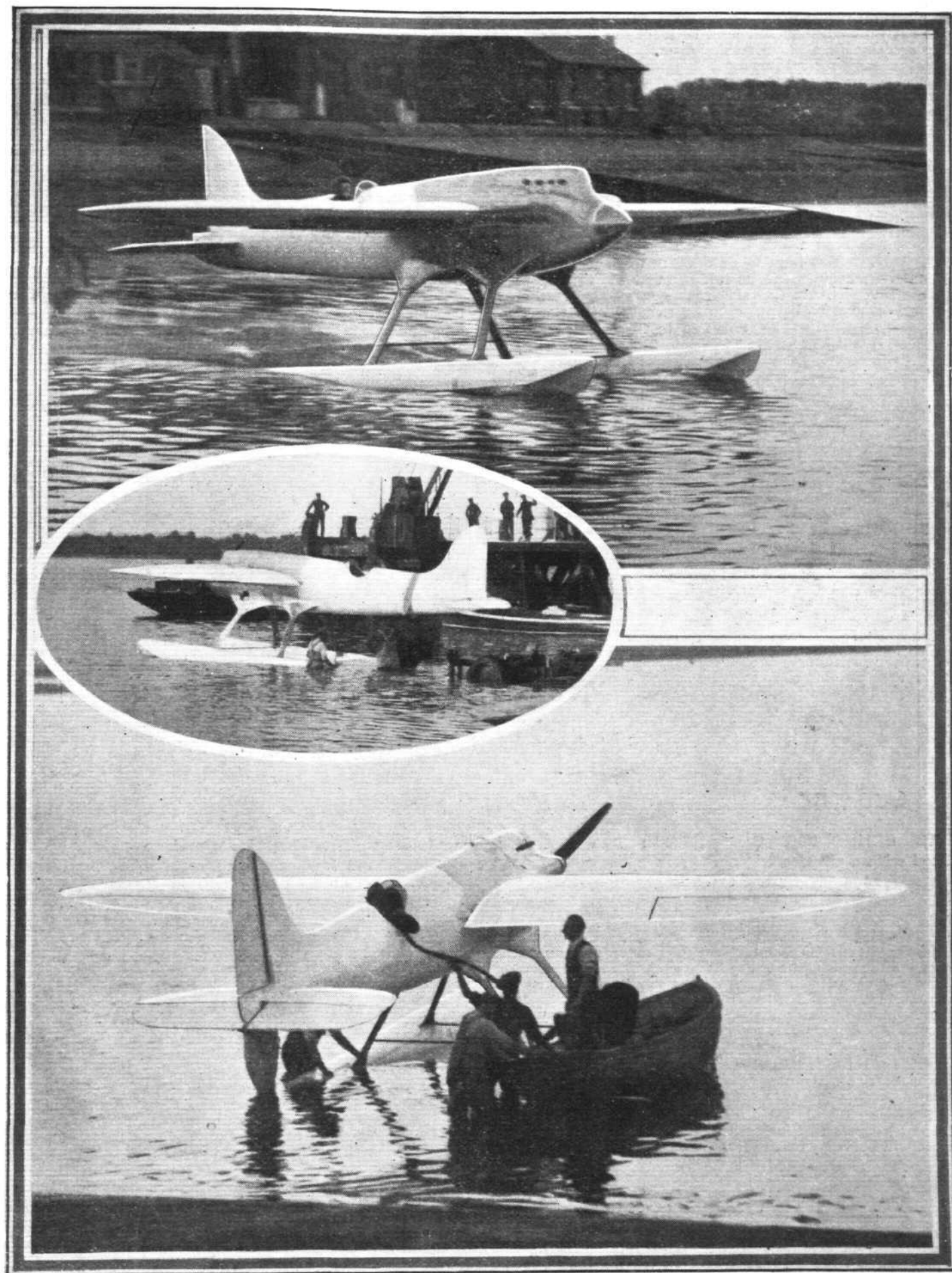
The 1922 race having been won by a British pilot, the 1923 race was held in this country, Cowes being the venue chosen for the race. Only two British defenders had been built for the 1923 race, and one of these, a Blackburn "Pellet," sank during an attempt to take off in the eliminating trials, leaving only the Supermarine flying boat to defend the cup. The British machine was hopelessly outclassed in

A BRITISH CHALLENGER



THE SCHNEIDER CUP RACE: These three views of the Gloster-Napier III give a reasonably good idea of the clean lines of Mr. Folland's design. The special Napier racing engine is totally cowled-in, and streamlining generally has been carried out to the greatest possible extent. At the top is a view of the machine taking off.

A BRITISH CHALLENGER



THE SCHNEIDER CUP RACE : Three views of the Supermarine—Napier S.4 monoplane. These official photographs do not do justice to the machine, which is of exceptionally pleasing lines and of very clean design. The under-carriage is unbraced, the four steel tube struts being cantilevers, which provide a considerable amount of springing of the floats. In the lower photograph the tube leading to the pilot's cockpit is the lead from the Bristol starter engine by means of which the Napier engine is started.

point of speed, and the race was easily won by the American pilot, Lieut. Rittenhouse, on a Curtiss-Navy racer. Rittenhouse covered the 345 kms. at an average speed of 177.38 m.p.h. (285.5 kms./hr).

A British challenger had been built for the 1924 Schneider Cup race by the Gloucestershire Aircraft Company, but this machine was wrecked during a test flight, and as no other challengers presented themselves at the race, the Americans very sportingly declared the 1924 race off rather than take a "walk-over."

This year's Schneider Cup race, which will be flown at Baltimore on Saturday, October 24, is over a 350 kms. distance, and will consist of seven laps of a triangular course measuring 50 kms., so that the total distance to be covered is 217.5 land miles.

In view of the very high speed of modern racing seaplanes it may be doubted whether such a course is really suitable, since it has been found that the physical effect on pilots while cornering at high speed appears to impose a limit at which the machines can be taken round the turning point. In the seven circuits of this year's course, no less than 19 turns will have to be made, and as each leg of the course will probably only take from two to three minutes on an average, it will be seen that the unfortunate pilots will have

That the American machines will be fast may be taken for granted, the Americans having had several years in which to develop racing seaplanes. That they will be formidable opponents cannot be doubted, and it seems likely that they may attain a speed of 240 m.p.h. in straightforward flight.

As regards the two British challengers, reference has already been made to the fact that these were built by the Gloucestershire Aircraft Company and by the Supermarine Aviation Works, respectively. That it has been found possible this year to build two challengers is due to the fact that the Air Ministry, realising that British prestige is at stake, has ordered from the two construction firms high-speed machines for technical development work, with the promise that if these two machines attained a certain specified speed they would be loaned to the constructors for the purpose of taking part in the Schneider Cup Race. Both machines have passed the stipulated tests, and will, as already stated, leave London on September 26.

THE SUPERMARINE-NAPIER S.4

Actually the Gloucestershire Aircraft Company has built two machines, which are identical except for certain very minor details. Both of these will be sent across, and, in addition, the Gloucestershire "Bamel," which has been used



THE SCHNEIDER CUP RACE: The Italian representative. The Macchi monoplane flying boat is fitted with a Curtiss engine. With a very high centre of thrust and low centre of resistance it might be expected that the difference in trim with engine on and engine off would be considerable.

a terrific strain to withstand. The machines themselves will probably stand the strains and stresses of turning better than will the pilots, and unless some method can be discovered of making the turns in such a way as to reduce the tendency in a steeply banked turn of the blood being drained from the pilot's brain, it would appear to be necessary for pilots to throttle down considerably at each turn. Owing to the short distances between turning points this will necessarily have the effect of reducing very materially the average speed established. On the other hand, there is this to be said for choosing such a course—that it will, to some extent, tend to prevent the use of freak machines upon which cornering would be difficult or impossible, but that the strain on the pilots will be very great indeed may be admitted.

THE MACHINES

Concerning the American Schneider Cup defenders practically nothing is definitely known in this country. The Curtiss Co. is known to have constructed machines for the race, and some of these are credited with terrific speeds when flown as land aeroplanes. One report actually states that a speed of over 300 m.p.h. has been attained, although from the accounts to hand it seems very unlikely that this speed was an average figure. It seems much more likely that it was attained either by diving or in flying down-wind.

by the pilots for training purposes, will also go over to be used by the pilots for practising over the actual course of the race. The Supermarine Aviation Works have not had time to build a reserve machine, but with the two Gloucestershire biplanes there should be little fear of Great Britain not being adequately represented in the race.

On Thursday of last week representatives of the press had an opportunity of inspecting the Supermarine-Napier S.4 at the Woolston works of the Supermarine Aviation Works. Owing to the congested nature of the River Itchen it was not found possible to give a demonstration flight with the machine, but the Napier engine was run up with the machine standing on the slipways, and gave an excellent impression of power, the silky smoothness with which the engine accelerated being most remarkable, and the note emitted at full throttle being very reassuring. In connection with the sound of the engine, it is of interest to note that Capt. Biard found that at full throttle he could barely hear his engine, all he heard being a relatively faint hum, such as one may hear upon standing in or close to an electric power station. Why this should be so is difficult to explain, but apparently at the very high speed corresponding to full throttle the sound is deflected by the turbulence in the air immediately surrounding the fuselage.

The Supermarine-Napier S.4 is an exceptionally fine piece of work from every point of view, and at first sight one cannot help feeling a certain amount of surprise that a British

designer has had sufficient imagination to produce such a machine. Perhaps one may describe the Supermarine-Napier S.4 as having the appearance of having been designed in an inspired moment, but having all that is considered best in British construction incorporated in its details. That the design is bold, no one will deny, and we think the greatest credit is due to Mr. R. J. Mitchell, chief designer of the Supermarine Aviation Works, for his courage in breaking away from stereotyped methods and striking out on entirely novel lines. When it is remembered that Mr. Mitchell has hitherto almost exclusively devoted his attention to the flying-boat biplane, it is little short of astonishing that he should have been able so entirely to break away from the types with which he has been so intimately connected for the past seven or eight years, and not only abandon the flying-boat type in favour of the twin-float arrangement, but actually change from the braced-biplane structure to the pure cantilever wing of the S.4.

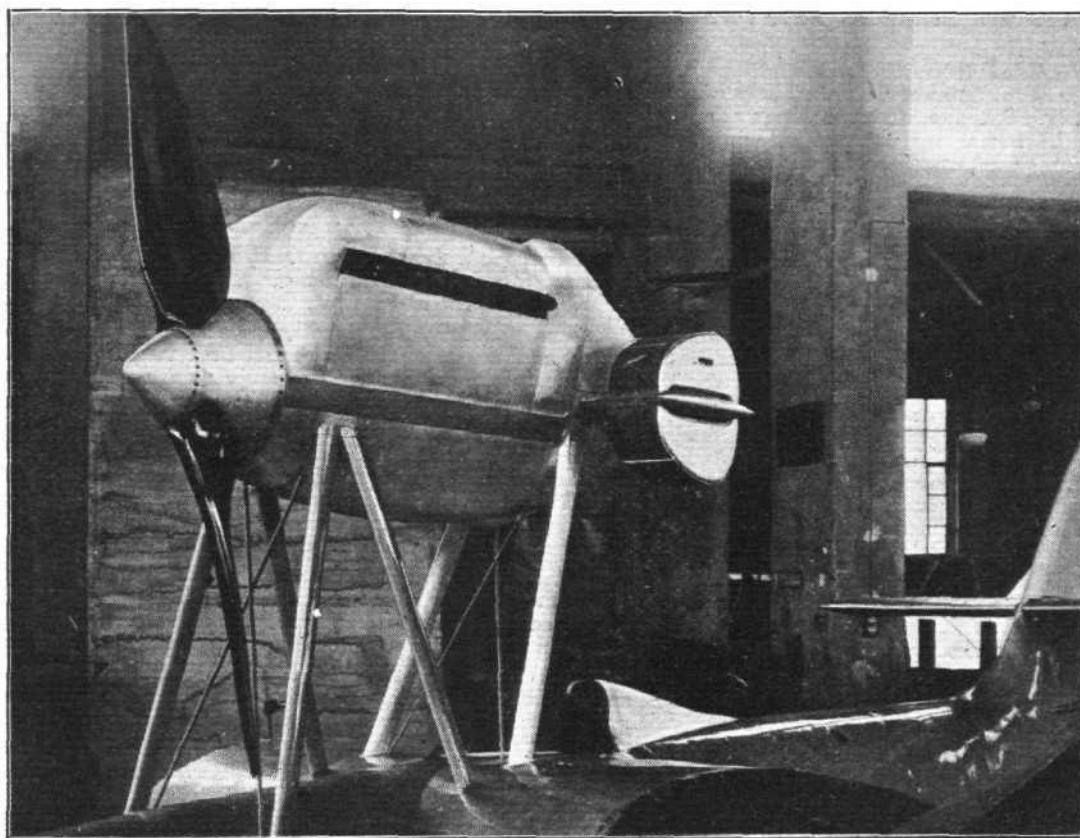
Bearing in mind the radical change of design which was involved, it is of considerable interest to note that instructions to proceed with the construction of this machine were issued on March 18, 1925, and the first test flight was carried out on August 25. Apart from certain very minor changes, no alterations have been found necessary, a fact which speaks volumes for Mr. Mitchell's ability as a designer.

recently developed by the Royal Aircraft Establishment at Farnborough and having a high L/D value at small angles of attack.

At first sight it seems somewhat daring to choose a cantilever monoplane wing for such a fast machine, but we gather that a trial wing was constructed and was tested to destruction at Farnborough, where the factors of safety were found to be adequate. In order slightly to reduce the landing speed, the whole trailing edge of the monoplane wing is hinged and used as a camber gear, and in this form the maximum lift coefficient of the section is, we believe, reasonably high, so that the combination of symmetrical section and trailing edge flaps should be particularly good at both ends of the speed scale.

The special Napier engine is mounted in the nose of the fuselage, and is entirely cowled in, each cylinder bank having an aluminium cowl over it where it projects through the main covering. A Fairey-Read duralumin propeller is fitted, and some idea of the speed at which the Napier racing engine runs may be formed when it is stated that the tip speed of the propeller is slightly higher than that of sound.

A small spinner surrounds the propeller boss, and as there is no nose radiator the entry for the air is about as clean as is possible to provide. Special Lamblin radiators are fitted under the lower surface of the wing, extending outwards about 6 ft. on each side.



□ □ □ □ □ □ □ □
The Schneider Cup Race: View of the Curtiss engine installation in the Macchi Flying Boat. Note the position of the radiators near the tail of the engine nacelle. A portion of the wing built integral with the hull may be seen.
□ □ □ □ □ □ □ □

The photographs on page 611 are, we regret to say, of very poor quality, and do not by any means do justice to the machine. They were, apparently, secured by an official photographer from the Air Ministry, and it cannot be said that they are a credit to the department. However, so "secret" had the Air Ministry held the machine that our photographer was not allowed to take any photographs, otherwise we should have been able to give a better idea of the really beautiful lines of the Supermarine-Napier S.4.

The S.4 is of exceptionally clean design, and the construction is mainly wood, no fabric being used for covering either in the fuselage or on the wings. The fuselage is built in two sections, of which the front portion is a steel tube structure, while the rear portion is a wooden monocoque. The front portion is covered with wood so as to form, with the rear wood portion, a perfect streamline shape, and the fin and tail plane are built integral with the fuselage and covered with ply-wood. All controls are carried inside the structure, rigid tubular rods being employed in place of cable and the ailerons being operated by torque tubes. The pilot's cockpit is placed very far aft in the fuselage and although the view is not, perhaps all that could be desired for landing, the position is such as to make for safety, and should the machine accidentally turn over in the sea there is nothing to obstruct the pilot's exit.

The cantilever monoplane wing is built in one piece, and is of symmetrical bi-convex section, the section being one

One of the most daring features of the design of the Supermarine Napier S.4 is the undercarriage, in which Mr. Mitchell has employed unbraced high tensile steel tubes of circular section. These tubes are triangulated at the top to the fuselage steel tube structure and at their lower ends to the special tubular bracing inside the floats. They are braced laterally by two horizontal tubes, but there is no wire bracing of any sort, so that the steel tubes are free to deflect both fore and aft and laterally. This gives a quite surprising amount of elasticity to the undercarriage structure, which, during the test flights over Southampton Water and the Solent, was found to stand up to the work extremely well. The two floats of the Supermarine-Napier S.4 are of the single-step type, and are built entirely of wood.

During the visit to the Southampton works, Commander James Bird, Managing Director of the company, briefly explained the manner in which the Supermarine-Napier S.4 came into being, and stated that although the race was by no means going to be a "walk-over," for the British representatives, he did feel fairly confident that the two British challengers would at any rate have a sporting chance. He also referred to the fact that none of the Supermarine directors would be going over to the race, but that it had been decided to send Mr. Mitchell instead, and he thought this would be a wise step since, if test flights on the other side made Captain Biard wish for any modifications to be carried out, Mr.

Mitchell would be the man best able to decide if such modifications were advisable. Commander Bird also expressed his thanks to the C.O., and all officers and ranks at the R.A.F. station at Calshot for the valuable assistance which had been given during the carrying out of the flying tests of the machine, and but for their timely assistance it would have been impossible to have carried out these tests as quickly and as successfully as had been done.

The Supermarine team will include, in addition to Captain Biard, the pilot of the machine, Mr. R. J. Mitchell, Chief engineer and designer; Mr. A. Powell, in charge of erection, Mr. H. B. Pickett, engine mechanic, Mr. G. H. Broome, rigger, and Mr. H. M. Grimes, launchman.

The Gloster-Napier III.

The machine designed for the Schneider Cup Race by Mr. H. P. Folland, and built by the Gloucestershire Aircraft Co., Ltd., Cheltenham, may be said to be the logical development of the company's previous racing machines. Mr. Folland has always been an advocate of the biplane for racing machines, and in the Gloster-Napier III he has adhered to that type. The Schneider Cup challenger bears a strong family resemblance to previous Gloucestershire racers, but has been considerably "cleaned up" and streamlined, wherever streamlining was possible. The wing area is exceptionally small, and the machine is certainly by far the smallest for its power ever constructed in Great Britain.

The fuselage is a plywood covered structure of very small cross sectional area, and of good streamline shape. There is but a single inter-plane strut on each side, and the wings are braced by streamline wires in the usual way. The wing section used is a special racing section developed by Mr. Folland, and a peculiar feature of the wings is that the tips of the upper plane are rounded, whilst the lower plane has square tips. Ailerons are fitted to the lower plane only, where they are readily accessible, and we believe the rounding of the top wing tips was chosen with a view to making the lower plane ailerons as effective as possible.

Like the Supermarine, the Gloster-Napier III has Lamblin radiators mounted on the wings, but whereas in the Supermarine the radiators are fitted under the wing, they are placed in the Gloster-Napier III in the leading edge of the lower plane close to the fuselage. Owing to the fact that the wing section used is a thin one, the radiators project considerably, and give the appearance of offering considerable resistance. This impression is, however, probably more apparent than real, and actually the resistance may be quite low. Probably a certain amount of resistance could have been saved by using wing radiators sunk in flush with the wing surface, but the construction of such radiators for a thin wing is not without difficulty, owing to the fact that at high speed the spars of a thin wing deflect a certain amount, which would be likely to cause leaks in the wing radiators. The Gloucestershire Aircraft Company consider that by now they have overcome the difficulties, but time did not allow of building these special radiators for the present machine.

The undercarriage is of the twin-float type, the two floats being built entirely of Duralumin by Short Bros., of Rochester. Like the Supermarine floats they are of the single-step type, but they are carried on a braced structure of steel tubes.

The Napier engine is neatly cowled in, and Mr. Folland has taken advantage of the fin above the fuselage carrying the top plane by fairing the cowl for the central bank of cylinders neatly into this fin. The cross-sectional area of the fuselage appears smaller than that of the Supermarine, but in consequence the "bulges" formed by the cowl over the cylinder banks are rather larger, and it would be interesting to know which affords more resistance, the smaller fuselage with larger bulges, or the larger fuselage with smaller bulges. The propeller is a Fairey-Read.

The tail of the Gloster-Napier III is of orthodox design, and the fixed tail plane is braced by streamline wires. Vertical fins are provided both above and below the fuselage, and the rudder is slotted to clear the conical shape of the stern of the fuselage.

M. Coste Detained in Germany

M. COSTE, the French pilot who is in hospital at Freiburg, as a result of the Paris-Karachi flight crash in the Black Forest—when M. Thierry was killed—has been "arrested" by the German authorities for violating German law by flying over forbidden territory without permission. It is expected, however, that Coste will be allowed to return to France—when well enough to do so—during the official inquiry which is now in progress. Meanwhile the French

In the Gloster-Napier III, the biplane racing machine would appear to have reached approximately the limit of its development, and the workmanship and finish are such as one would expect in machines produced by the Gloucestershire Aircraft Company. During tests flights the machine is stated to have handled extremely well, both on the water and in the air, and Capt. Broad and Mr. Hinkler have got in considerable practice, not only on the actual racer, but also on the "Bamel" practice machine.

At a luncheon given by the Gloucestershire Aircraft Company and by D. Napier and Sons, Mr. David Longden, Managing Director of the Gloucestershire Aircraft Co., referred briefly to the long association of these two firms in air racing, and said he trusted this would continue, and he was glad to be able to express the thanks of his Company for the generous assistance received from all quarters; especially from the Air Ministry and their technical staff, and also the officers and men of the Felixstowe station. Several constructors had also given advice and help without reserve, and he took that as an indication that the industry as a whole realised that this event was one of cardinal importance to Great Britain's prestige in the air. Mr. Longden added that a British victory in the race would prove of great importance, also to the prosperity of the industry, as he was sure that trade followed records.

In conclusion Mr. Longden expressed his thanks to the De Havilland Company and to A. V. Roe and Co., respectively, for their very sporting spirit in lending for the race their pilots, Capt. H. Broad and Mr. Bert Hinkler.

The Italian Representative.

Concerning the Italian representative but little information is available. We are able, however, by the kindness of General A. Guidoni, the Italian Air Attaché in London, to publish this week two views of the Macchi Schneider Cup machine. This, it will be seen, is a flying boat monoplane, and is fitted with a Curtiss engine of a nominal 425 h.p. The very high centre of thrust, coupled with a very low centre of resistance, would appear to tend to make the machine somewhat difficult to fly, as one would imagine that there must be a very considerable difference in trim between the engine-on and engine-off condition. The machine is certainly of very clean lines, and it would be difficult to imagine a single-engined flying boat in which resistance was reduced to a greater extent. The machine will be piloted in the Schneider Cup race by the famous Italian aviator, De Briganti, who won the Schneider Cup race for Italy in 1921, when he was flying a Savoia flying-boat.

The Napier Engine.

At the moment little may be said concerning the special racing engine developed by D. Napier and Sons for the Schneider Cup challengers. The photographs published on page 609 show the engine to be of similar engine design to the famous Napier "Lion," but considerable cleaning up has been effected, with the result that the spaces between cylinder blocks are now entirely free of obstruction, which fact has enabled the designers of the machines to provide cowling of very low resistance.

The Napier racing engine uses direct drive, and the power output has been very greatly increased, so that, in conjunction with the reduced weight, the racing engine should be a difficult proposition to beat. Details as to speed and power output of the Napier racing engine cannot, for obvious reasons, be published at the moment, but all who heard the engine running were agreed that, for smoothness and steadiness, it would be difficult to improve upon it. Probably at a later date we may be in a position to give further details.

Air Minister's Messages.

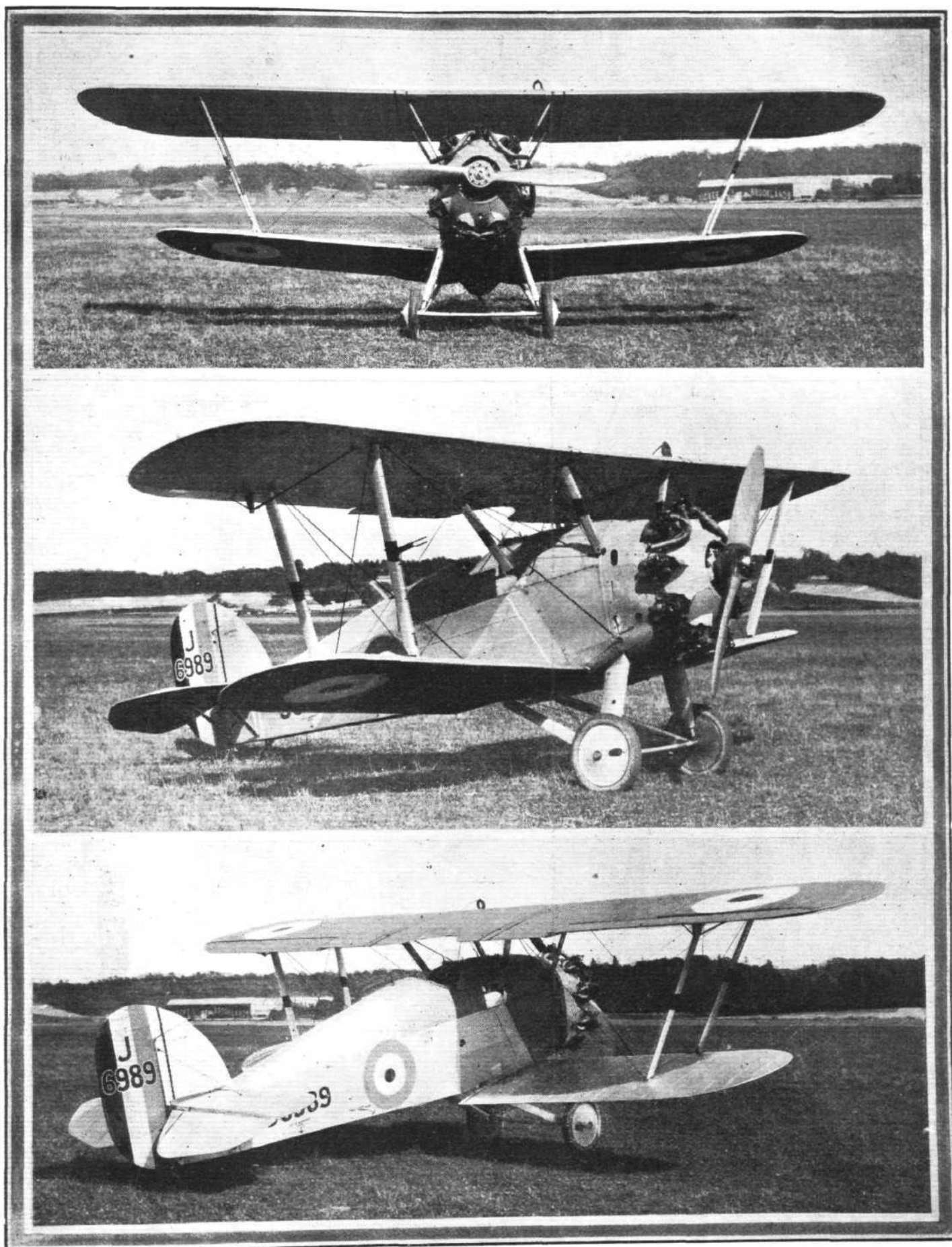
Owing to extreme pressure of work the Secretary of State for Air, Sir Samuel Hoare, was not able to visit Southampton or Felixstowe to inspect the racing seaplanes, but he sent telegrams on both occasions, regretting his inability to be present and wishing the British challengers success in the Race.

Government has lodged a protest, through its Ambassador at Berlin, against the action of the German authorities.

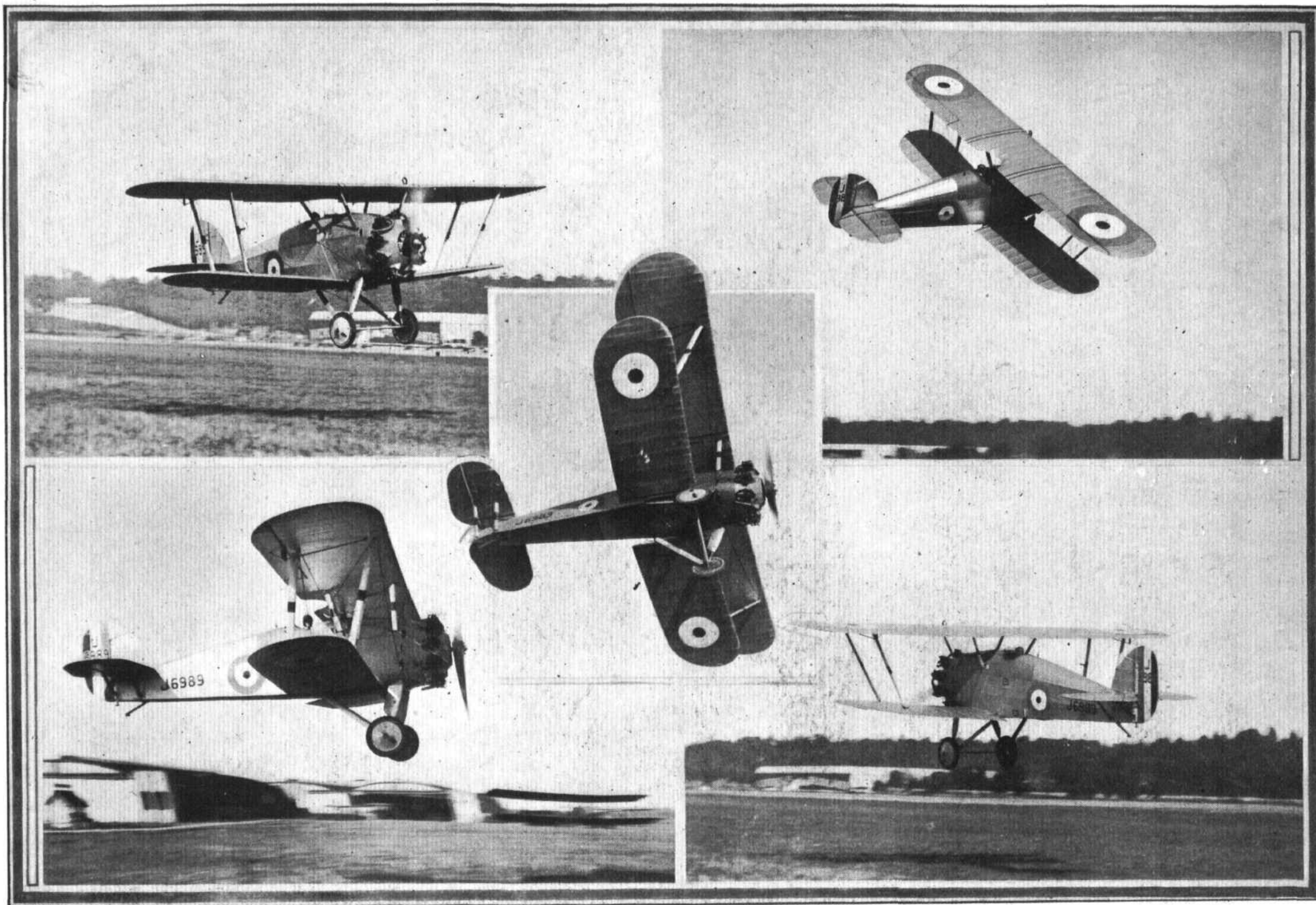
Col. Mitchell Leaves U.S. Air Service

It is reported from Washington that Col. Mitchell, who has of late severely criticised the U.S. Government Air Policy—especially as regards the "Shenandoah" disaster—has been relieved from active duty as an air officer in the U.S. Army. No reasons for this action are as yet forthcoming.

A MODERN FIGHTER



THE HAWKER "HERON": Built for the Air Ministry, the Hawker "Heron" is a single-seater fighter, fitted with Bristol "Jupiter" engine. The machine not yet having been put into quantity production, no details may be given, other than those which may be gathered from an inspection of the photographs. The "Heron," designed and built by the Hawker Engineering Company, has a remarkable climb, but actual figures may not yet be published.



THE HAWKER "HERON": These views, taken at Brooklands recently, show the machine in various attitudes. Considering the speed at which the machine flies, the quality of these photographs is, we think, quite exceptionally good. The pilot was Flight Lieutenant Bulman.

THE BEARDMORE-ROHRBACH "INVERNESS" FLYING-BOAT

Two Napier "Lion" Engines

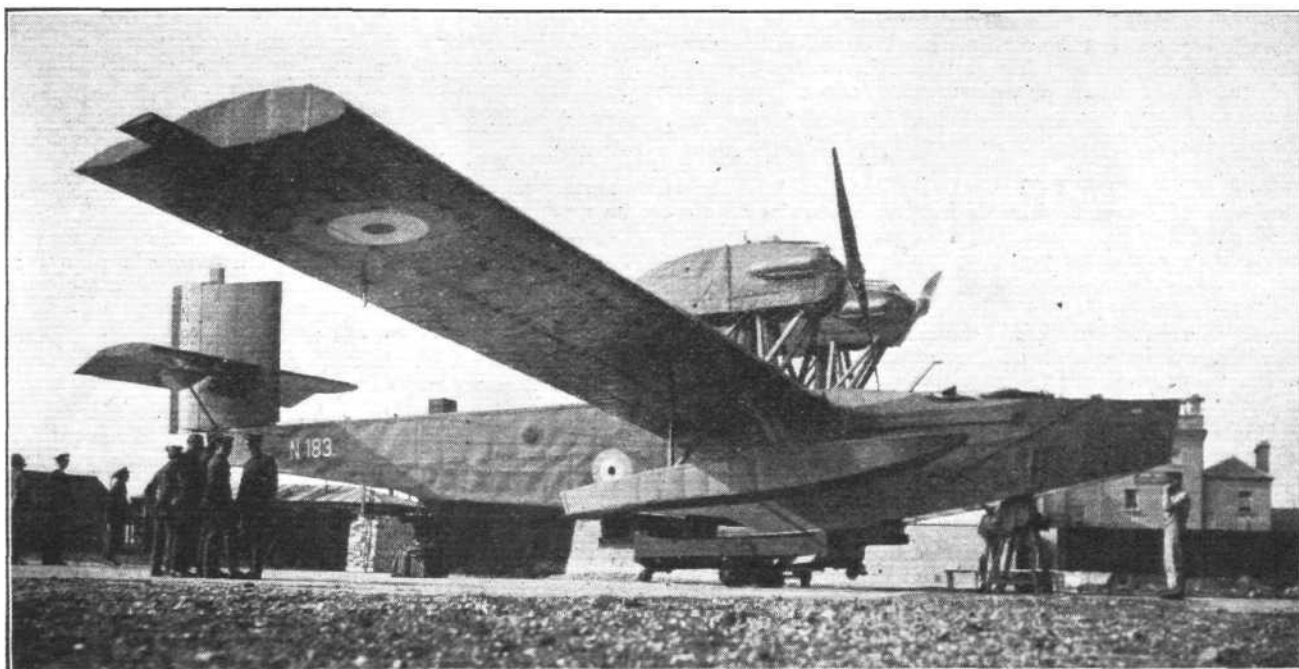
ON Friday of last week, September 18, the Beardmore-Rohrbach flying boat "Inverness" arrived at Felixstowe after a flight of about 600 miles from Copenhagen, with a stop at Texel. The machine arrived during the visit by a number of press representatives to Felixstowe seaplane station for the purpose of inspecting the Gloster-Napier III machine built for the Schneider Cup race, and thus many had an opportunity of seeing for the first time the somewhat unorthodox machine designed by Dr. Rohrbach and built in his Copenhagen factory. It will be remembered that last year we were able to announce in *FLIGHT* that the Beardmore Company had arranged to build Rohrbach machines under licence, and while several Beardmore-Rohrbach machines are now in course of construction at the Beardmore factory at Dalmuir, it was desired to obtain a machine at the earliest possible opportunity for the British Air Ministry, and consequently one of the Danish-built machines was brought over. Similar types are in course of production at Dalmuir.

The Beardmore-Rohrbach "Inverness" is generally speaking similar to the type described in *FLIGHT* last year,

on the water is obtained by auxiliary floats placed approximately under the engines, which position Dr. Rohrbach has found to give a maximum of lateral stability with a minimum risk of damage.

Other unusual features in the design of the Beardmore-Rohrbach "Inverness" are the trimming tail fin, which, pivoting on a centre pyramid of Duralumin, enables the fin to be set over at an angle so as to relieve the pilot of the necessity of correcting with the rudder a turning moment caused by one engine stopping, and the unusual aileron balances. The "Inverness" is stated to be very stable, and to be capable of being flown "hands off" for quite long periods, even in bumpy weather, a fact which should be of very considerable importance during long-distance flights.

Constructionally, the Beardmore-Rohrbach is unusual in that not only is Duralumin employed exclusively (except for a few highly-stressed wing fittings, etc.), but this material is used mainly in the form of flat sheet, or plain simple angle-sections or channel-sections, easy to work, inspect and repair. The wing structure consists fundamentally of a box, roughly



THE BEARDMORE-ROHRBACH "INVERNESS" FLYING BOAT: View of the machine taken shortly after its arrival from Copenhagen.

and represents in many ways a bold departure from what has almost become standard practice. Not only is the machine built entirely of Duralumin, no wood or fabric whatever entering into the construction, but the aerodynamic and hydrodynamic design is equally unusual.

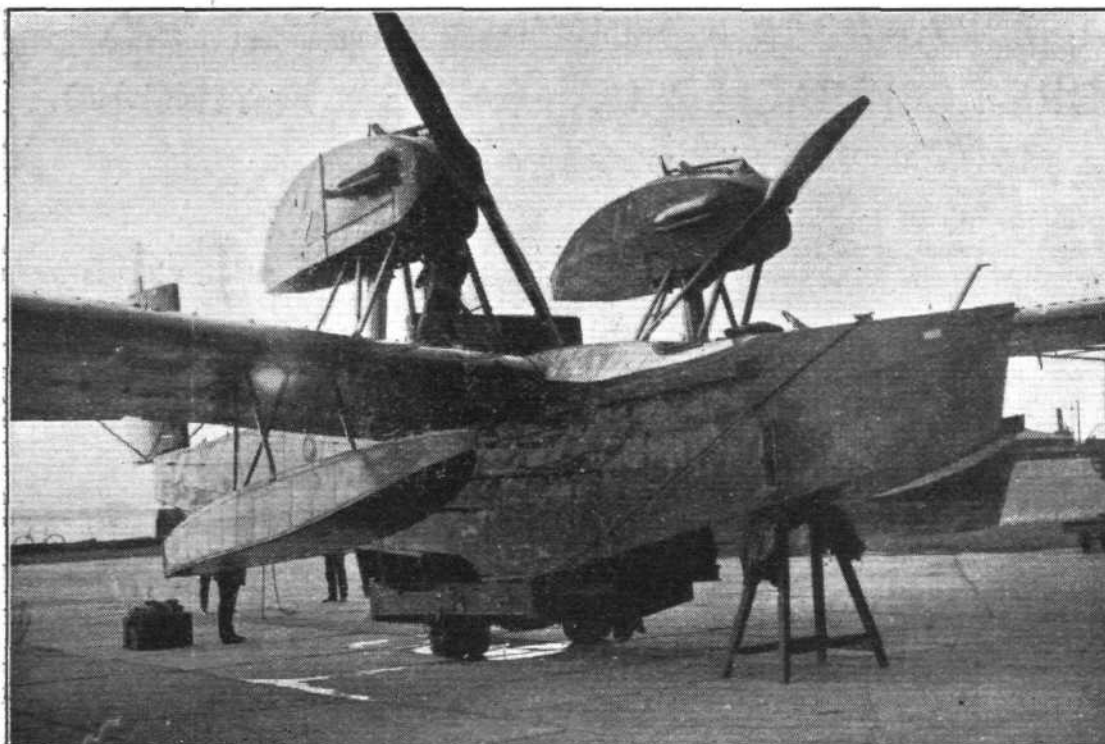
As the accompanying photographs will show, the "Inverness" is a twin-engined monoplane flying-boat, a remarkable feature of which is the large dihedral angle at which the wings are set. This has the effect, apart from its advantages, in making the machine stable in the air, of lifting the wing tips well clear of the sea, and thus damage is unlikely to occur. The two Napier "Lion" engines are mounted in streamline nacelles above the wing, where the propellers are well clear of spray, etc. The engines are relatively close together, and thus the turning moment which arises when one engine stops is reduced to a minimum. It is claimed that the machine is able to fly level with one engine stopped, and actually can be turned against the thrust of the working engine.

The hull shape is of interest on account of the flat sides and flat bottom, both unusual features in British flying-boat design. In the case of the Beardmore "Inverness" the straight-frame type of hull probably greatly facilitates the all-metal construction, since it enables flat sheets to be employed with a minimum of working. Lateral stability

of rectangular section, of a depth corresponding to the ordinates of the wing section, and whose sides form the front and rear wing spars. To this box structure are hinged the leading and trailing edges. Thus, if it is desired to inspect the interior of the wing structure, or to drain out any water that may have collected, all that is necessary is to undo the small bolts of the upper hinges, when the leading or trailing edge drops into a vertical position and enables the interior to be inspected. As the wing is built in sections, each section can be inspected separately, and incidentally in case of damage to a leading or trailing edge only the damaged section need be replaced.

The whole machine has been designed with robustness in view, and owing to the metallic wing covering the machine should be capable of remaining in the open for weeks at a time without fear of deterioration. It is claimed that a method of treatment has been evolved which protects the Duralumin against corrosion, and certainly Dr. Rohrbach has had very long experience of the metal, first during his period with the Zeppelin company and now for several years since he started his own factory after the War.

The petrol tanks which supply the two Napier "Lion" engines are housed in the trailing edge of the wings, where they are well removed from any fire risk, and where also they offer no head resistance.



The Beardmore-Rohrbach "Inverness." View of the nacelles housing the Napier "Lion" engines.

In conclusion, it may be mentioned that the Beardmore-Rohrbach belongs to the type of machine known officially as a "four-seater open sea reconnaissance flying-boat." According to Deutsche Motor-Zeitschrift, the overall length

is 17.2 m. (56 ft. 5 ins.), and the wing span is 29 m. (95 ft.). The wing area is 73.4 sq. m. (79P sq. ft.), and the empty weight is in the neighbourhood of 8,000 lb. No performance figures are available.

Amundsen at Central Hall

READERS of FLIGHT will be interested to know that Roald Amundsen, the famous Norwegian explorer, will lecture on his great polar flight at the Central Hall, Westminster, on Monday next, September 28, at 8.30 p.m. The chair will be taken by Capt. E. R. G. R. Evans, C.B., D.S.O., R.N., and it is expected that Amundsen will illustrate his lecture with photographs taken during the eventful voyage. It may be recollected that the two Dornier-Wal flying boats, with their British Rolls-Royce engines, were forced to alight among the ice fields, owing to running short of petrol, and that, after many dangers and difficulties, the whole expedition at last succeeded in returning in one of the machines, leaving the other behind in the ice. Capt. Amundsen's story should, apart from the very general interest which it cannot fail to arouse, be of great value to all who want to familiarise themselves with the use of aircraft under difficult conditions. Tickets may be obtained from the Central Hall box office (Phone: Victoria 3997), or from the usual agencies. The prices are: Stalls, 8s. 6d., 5s. 9d., and 4s. 9d.; reserved balcony, 8s. 6d. and 4s. 9d.; unreserved floor and balcony, 3s. 6d. and 2s. 4d.

Solos at Lancashire Aero Club

IT begins to look as if, after all, the honour of getting the first pilot's certificate at a light 'plane club may not go to the London Aeroplane Club but to the Lancashire Aero Club. On Sunday last, September 20, two members of this club went for solo flights on "Moths." They were A. Goodfellow and M. Sacayo, and at least two more pupils are expected to go for their solo flights before the end of this week.

R.A.F. Re-unions—28 Squadron (R.A.F.) Old Boys' Association

A RE-UNION supper in connection with the above Association will be held at the White Horse Restaurant, 100, High Holborn, on Saturday, October 10, on behalf of the Squadron. Tickets, price 3s. 6d., may be obtained from the Hon. Sec., C. T. Hodges, 102, Camden Street, N.W. 1.

D.H. Services to "Moth" Owners

IT is a welcome sign of the times that the de Havilland Aircraft Company is now offering special services to owners of D.H. "Moth" aeroplanes. These services should do a great deal to popularise flying by the private owner who decides to make the Stag Lane aerodrome his "garage." To begin with, housing accommodation and attendance is offered at an inclusive rate of £2 10s. per machine per month, or 15s. weekly. This fee includes housing for the machine and ordinary attendance, such as assistance in removal of machine from hangar, starting the engine, fueling, etc. Qualified ground engineers are available on the aerodrome, and an

examination of the machine, its engine and instruments will be made at a fee of 7s. 6d.

Major overhauls, adjustments and repairs will be undertaken on a cost-plus-profit basis, and an estimate may be obtained before the work is undertaken. Cleaning (external) of machine and cockpits is undertaken for a fee of 7s. 6d., and supplies of petrol, oil, machine and engine replacements and general supplies are provided at current retail prices. The charges mentioned apply, of course, to normal working hours. At other times an additional charge will be made.

London's Air-Raid Records

A NUMBER of very interesting photographs and relics—some of which seen for the first time—relating to the air raids on London during the War, are now on view at the Imperial War Museum, South Kensington. Lack of space will not allow us to give a description of these exhibits, and we can only say that they are well worth a close inspection.

Loening Amphibian's Week's Tour

ONE of the Loening amphibians—a description of which machine appeared in FLIGHT for May 21, 1925—recently completed a week's tour up the coast of Maine. Leaving Mitchel Field, where the machine is stationed, on August 24, with Capt. T. Bolland at the wheel, it flew up to Hartford, Conn., and then from there across country to Newport, Rhode Island, around Cape Cod to Boston. This trip of about 300 miles was accomplished in 3 hours, during which a study was made of the cross-country conditions in this region, particularly with reference to water landing localities for operations from Mitchel Field. A landing was made at the East Boston Airport, and the following day the amphibian made a non-stop flight to Isleboro, with Mr. Davis, acting Secretary of War as passenger. The 200 miles of this trip was covered in 1 hr. 50 mins., and the machine was anchored alongside the residence of Mr. Davis overnight. The next day Capt. Bolland made several short trips in this vicinity, demonstrating the machine, and then flew on to Portland, landing there in the harbour and taxied up on a beach near the city. The amphibian was moored here overnight, and next day Lieut. Wade, one of the World Flyers, joined the crew and the journey was resumed to Mere Point, where a celebration was being held dedicating a memorial tablet commemorating the arrival there of the World Flyers. Subsequently the amphibian was flown to New London, Conn., where the machine was tied up to a buoy overnight. Capt. Bolland flew back to Mitchel Field next day, after having made some thirty or forty flights during the cruise, and having inspected practically the entire New England Coast. Almost throughout the cruise the engine was run at 1,380 r.p.m., using slightly over 20 gals. of fuel per hour, and averaging a speed of 100 m.p.h.

AERONAUTICAL RESEARCH COMMITTEE REPORTS

FROM the number of enquiries we receive it appears that there is a desire in aircraft circles to know approximately the contents of the various technical publications of the Aeronautical Research Committee. All the aircraft firms probably receive these reports regularly, whether or not they contain anything of immediate interest or utility. In the case of draughtsmen, however, and others interested in aeronautics, who can hardly be expected to purchase all the reports, the problem of deciding whether any publication interests him is often a difficult one. As it is obviously desirable that the knowledge of aeronautics should be made available to all who take an interest in the subject, we have arranged with the Air Ministry to publish in **FLIGHT** summaries of all the technical publications as soon as these are issued, or shortly before they are published. All A.R.C. publications can be purchased from H.M. Stationery Offices at Adastral House, Kingsway, London, W.C.2; 28, Abingdon Street, London, S.W.1; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 120, George Street, Edinburgh, and through any bookseller.

Experiments on a Model of a Bristol Fighter Aeroplane (1/10th Scale). Section 1.—Force and Moment Measurements at Various Angles of Yaw. By H. B. Irving, B.Sc., and A. S. Batson, B.Sc. Section 2.—Lateral Derivatives by the Forced Oscillation Method. By R. A. Frazer, B.A., B.Sc., A. S. Batson, B.Sc., and A. G. Gadd, R. and M., No. 932. (Ae. 153.) (40 pages and 17 diagrams.) October, 1924. Price 2s. net.

These experiments are part of a general investigation (model and full scale) on the stability and control characteristics of the Bristol Fighter aeroplane.

Other reports on a Bristol Fighter aeroplane are the following:—R. and M. 876. Lift, drag and pitching moment of the $\frac{1}{10}$ scale Bristol Fighter Model in the Duplex Wind Tunnel. By E. F. Relf and E. Ower. R. and M. 937. Measurements of lift, drag and pitching moment of the $\frac{1}{10}$ scale model of the Bristol Fighter with airscrew running. By E. F. Relf and L. J. Jones.

Section 1 describes force and moment measurements over a large range of angle of yaw, and the lateral force and moment derivatives have been calculated therefrom.

Section 2 describes the method of measurement of various lateral rotary derivatives L_p , N_r , L_r , N_p employing forced oscillations.

The attachment for the main balance for measuring the forces and moments (Section 1) has been described in R. and M. 822 (an attachment of the main balance of 7 ft. No. 2 wind tunnel for measuring three forces and three moments.—By T. Lavender, T. H. Fewster and G. F. Henderson). The continuous rotation balance used for the work of Section 2 was described in R. and M. 828 (a continuous rotation balance for the measurement of L_p at small rates of roll. By E. F. Relf and T. Lavender.)

The report consists almost entirely of data obtained at different wind speeds for a wide scope of experiment, the incidence of the model being varied between 2 and 36°, and the elevators being set at angles from 0 to 30°.

The Interference of Wind Channel Walls on the Downwash Angle and the Tailsetting to Trim. By H. Glauert, M.A., and A. S. Hartshorn, B.Sc., presented by the Director of Scientific Research. R. and M., No. 947. (Ae. 167.) November, 1924.

When considering the application of wind tunnel tests to the prediction of aeroplane performance, it is important to know the effect of the wind channel walls on the model. Attention was first drawn to this matter from a theoretical standpoint by the work of Prandtl at Göttingen, and reference is made to it in R. and M. 867, "The interference of Wind Channel walls on the Aerodynamic Characteristics of an Aerofoil," by H. Glauert.

At a later date an experimental test of the Prandtl correction for wall interference was described in R. and M. 898. Further experiments are described in the present report (R. and M. 947), which gives an excellent confirmation by special check experiments of the theoretical formulæ deduced from Prandtl's aerofoil theory.

The theory of wind channel interference has been extended to determine the corrections which must be applied to the observed values of the downwash angle and of the tailsetting to trim. The theoretical formulæ have also been checked in the present paper by measurements of the pitching moment on a model biplane in a 4 ft. and a 7 ft. wind channel.

The experimental results have fully confirmed the theoretical formulæ, and it appears that the correction to be applied to the observed tailsettings is of the same order of magnitude as the correction to the angle of incidence. The experiments also showed that the effect of the position of the model in the channel is noticeable but smaller than the effect of the size of the channel.

The theoretical formulæ obtained can be used to correct wind channel observations so as to apply to free flight conditions, and make it possible to obtain reliable results from a model whose span is as large as three-quarters of the channel dimension.

Report on the Use of Artificial Sources of Light as a Substitute in the Weathering of Fabric. Part 1. By W. G. Glendinning, B.A., B.Sc., of the Royal Aircraft Establishment. Presented by the Director of Scientific Research. R. and M., No. 974. (M. 29.) (5 pages and 1 diagram.) July, 1925. Price 6d. net.

As fabric is the normal covering for aeroplane wings, any experiments dealing with methods of artificial weathering have importance. Similar methods may have application to the weathering of other types of fabrics exposed to the atmosphere (or to light) for uses other than aeronautical.

The main objection to atmospheric exposure tests is the length of time that is required before definite results are obtainable, and efforts have been previously made to develop a quicker laboratory method. Previous reports dealing with this subject are as follows:—

- (1) The action of sunlight on aeroplane fabric; its nature and prevention.—Aston, R.A.F. — R. and M. 396.
- (2) Report on further experiments upon the action of light on fabric and its prevention.—Aston, R.A.E. .. R. and M. 585.
- (3) Report on further investigations of the effect of sunlight on aeroplane fabric—with appendix by Guy Barr, D.Sc.—R.A.E. .. R. and M. 845.

The present report describes tests carried out on the carbon arc and quartz mercury lamp.

The spectrum of the carbon arc extends over approximately the same range as that of sunlight, and although the energy distribution is not identical, it is probable that the deteriorating effects of the two spectra are very similar. An enclosed carbon arc consuming 13 amperes was found to produce deterioration in linen at a distance of 11 ins. from the arc, at a rate approximately 50 per cent. greater than that produced by June sunlight at Farnborough. Comparative exposures of various samples of R.A.F. blue clothing material to this arc and to sunlight (April) showed that the fading effect of both sources was similar and that the effect of the carbon arc was about 25 per cent. greater.

The main destructive effect of the quartz mercury arc has been shown to be due to the shorter wave-lengths which are not present in the sun's spectrum. No evidence has been found to show that the chemical change causing deterioration and induced by the mercury arc differs from that induced by sunlight. It is probable that any scheme which was successful in protecting fabric against the mercury arc would be equally good against sunlight; for this reason it is considered advisable to continue the investigation of the effect of the mercury arc at the same time as that of the carbon arc and other sources.

The design of an arrangement of the carbon arc to give the maximum destructive effect is proposed for consideration as well as tests on electrodes of different types.

Comparative tests with the carbon, mercury, iron, and tungsten arcs, and high temperature filament lamps, and investigation of the effect of these sources on fabric under various conditions will probably be put in hand.

Lift and Drag of Two Aerofoils Measured over 360° Range of Incidence. By C. N. H. Lock, M.A., and H. C. H. Townend, B.Sc. R. and M., No. 958. (Ae. 177.) November, 1924. Price 6d. net.

For purposes of airscrew design it is desirable to know the lift, drag and centre of pressure on the sections used in the design of blades. The present report gives the data from experiments on sections having a flat under-surface and maximum camber ratios of 0.168 and 0.086. These sections were used in the National Physical Laboratory experiments on the family of airscrews (see R. and M., No. 829). Other experiments on aerofoils through a 360° range of incidence are given in R. and M., No. 152, "Experiments on Models of Aeroplane Wings."—N.P.L.

ROYAL AIR FORCE FLYING TRAINING

Part II, Applied Flying, 1922 ; Part III, Seaplane Flying

By MAJOR F. A. DE V. ROBERTSON, V.D.

Two manuals of flying training have just been made available for the public—Part II, which has been brought up to date in December, 1922, at a cost of 2s. 6d., and Part III, just published, at a cost of 1s.

"Applied Flying, 1922," is a volume which certainly should be owned by every light aeroplane club in the country, and it would be advisable for every flying member of those clubs, and indeed for all pilots, service and private, to possess a copy. The chief value to civilian pilots and pupils is the first chapter, entitled "Air Pilotage," which deals in detail and in very clear language with maps and charts, magnetism, the compass, flying errors, instruments generally, practical air pilotage, pilotage by night, etc. However clear may be the directions and lectures of the instructors, pupils will certainly find it advantageous to study this chapter privately and to commit most portions of it to memory.

But, though Sir Philip Sassoon urged upon the London club the desirability of "weaning the aeroplane from its war-like associations," still, it is certainly to be hoped that in due course the R.A.F. Reserve, the Special Reserve, and the Auxiliary Force will owe a great deal of their strength to these light aeroplane clubs. A determination to defend one's country and empire, and the training of oneself to do so with effect are not reprehensible, either as sentiment or as action. Every club member (at any rate, every male member) when he gets his ticket must inevitably put to himself the question, "Shall I join one of the citizen air forces?" It is to be presumed that the Under-Secretary for Air cordially hopes that the answer will usually be "Yes." All such pilots will certainly read with very real interest the chapters on formation flying, night flying, aerial fighting, and attack on airships and kite balloons. These chapters are worded in the rather stiff phraseology which one expects in training manuals; but, even so, they are stirring reading which makes

the blood pulse faster and recalls thoughts of Ball and Mannock and Guynemer. Not improbably, the mere reading of these chapters will decide many newly qualified pilots to apply for commissions. One might go further, and predict that of the many thousands who enjoy the display at Hendon every June, most would find a keener and more intelligent pleasure in the manoeuvres if they had read the chapters on formation flying and aerial fighting. Popular interest in aircraft is rapidly increasing, and any publication which helps to expound the mysteries to the thinking section of the public deserves to, and possibly will, find ready purchasers.

"Seaplane Flying" is naturally a more specialised publication than "Applied Flying." Seaplanes ought to be of general interest to an island people, but, as a matter of fact, the British public gets few chances of developing an interest in the subject. Two years ago the Schneider Cup was contested at Cowes, and last year some seaplanes flew in the King's Cup. Apart from these events, only people who live near the few seaplane stations have any chance of watching marine aircraft. It is a great pity, especially as there are few prettier sights to be seen than seaplanes arising and alighting. It is also a pity that there is no annual competition for seaplanes in the United Kingdom.

"Seaplane Flying" makes it clear that aircraft of this type are far more exacting than are landplanes, and call for wider and deeper study on the part of the pilots and mechanics who have to deal with them. The pilot must be a seaman as well as an airman, and the most arduous part of his duties occurs when his aircraft is not in the air. This manual gives general rules for taxiing, taking off and alighting, but confesses "it is, obviously, impossible to lay down rules for the handling of a seaplane in every conceivable combination of wind and sea." For every one interested in flying the publication is very readable and ought to be read.

Bristol-Engined "Goliaths"

It is probably not generally known that the Bristol "Jupiter" engine has been used with great success in the Moroccan campaign against the Riffs. Farman "Goliaths" have been engaged in bombing operations against the Riff capital, and it may be mentioned that in one day no less than 10 tons of bombs were dropped by "Goliaths" fitted with "Jupiter" engines. In this connection it is of interest to note that the lightness and power of the "Jupiters" enable the machines to carry nearly 900 lbs. more load than when fitted with the water-cooled engines forming their usual power plant. One "Jupiter"-engined "Goliath" put up the same performance as its prototype, although carrying 700 kgs. more useful load.

Tokyo-London Flight

THE Japanese flight from Tokyo to London, organised by the *Asahi* newspaper and in which Maj. Abe and Mr. Kawachi are piloting two Breguet biplanes, is now as good as completed. From Moscow—which was reached on August 25—they flew to Königsberg on September 15. On September 17 they left for Berlin, but Mr. Kawachi met with engine trouble and had to return to Königsberg. Maj. Abe, however, arrived safely in Berlin that afternoon, Mr. Kawachi joining him the next day. The Japanese airmen were invited to several functions, during which statements were made by certain German air-line officials regarding the establishment, before long, of regular air routes to Japan via Berlin and Moscow. In the meanwhile great preparations are being made in Paris—which is probably the next point of call—for giving the Japanese airmen an enthusiastic welcome, for the flight is virtually in the nature of a return visit to that made by Pelletier d'Oisy last year. After being fêted in Paris, they will visit London and Brussels, and then they will proceed to Lyons, Milan, Genoa, and, finally, Rome. The journey home will be made by sea.

French Flights to Persia

ON September 19 M. Noguès, one of the leading French pilots on the Paris-Constantinople air line, left Paris on a flight to Persia, via Angora, Mosul, Baghdad and Hamadan. The object of the flight, which is organised by the Department of Aeronautics, is to survey the route from Constantinople to Persia, with the ultimate object of extending the French commercial air service. Noguès is flying a commercial

limousine machine as used for carrying passengers and goods. Four French military pilots are to follow Noguès along the same route, mainly to obtain comparative data regarding the different types of aircraft and engines being used for the flight. The four pilots are Maj. Dagneau, Capt. Arrachard and Weiss, and Lieut. Charles.

German Winter Air Services

THE German Europa Union air line company is making arrangements for maintaining several of its air services during the winter months, in one case—on a service between Stockholm and Revel via Helsingfors—the machines employed are to be fitted with long skids so that the machines may alight on and arise from the ice. The following services will be maintained: Berlin-Malmö; Berlin-Gleewitz; Berlin-Essen; Berlin-Leipzig; Berlin-Dresden; Essen-Hamburg-Malmö; Essen-Amsterdam; Vienna-Munich; and Vienna-Budapest.

Rome-Melbourne-Tokyo Flight

AT last Maj. the Marquis de Pinedo has been able to resume his flight to Tokyo on the Savoia S.16 *ter* flying boat. On September 19 he arrived at Tamsui, Formosa, from Aparri, Philippine Islands. Continuing on September 21, he flew to Shanghai.

Air Route to India Survey

AFTER a short delay resulting from their forced landings on September 12, Sir Sefton Brancker, Lieut.-Col. Minchin and Maj. Birchall continued their task of surveying the proposed air route to India, and arrived at Bandar Abbas on September 14. The next day they flew to Chakbar, Sir Sefton Brancker proceeding to Teheran. Lieut.-Col. Minchin and Maj. Birchall went on to Karachi, arriving there on September 16.

Society of Model Aeronautical Engineers

OWING to the bad weather on Saturday last, the hydro-aeroplane trials fixed for that day had to be postponed. These will now be held at the Welsh Harp (Hendon) on Saturday next, September 26. In last week's report from the Society an error occurred regarding Mr. B. K. Johnson's flights with his twin tractor model. His best flight was given as 3.18 secs.—this, of course, should have read 31.8 secs. So much for the decimal system!

THE ROYAL AIR FORCE

London Gazette, September 18

General Duties Branch

Flight-Lieut. N. C. Seward is granted a perm. commn. in the rank stated; Sept. 16. R. A. Seaton is granted a short service commn. as a Flying Officer, with effect from, and with seniority of, Sept. 2.

The following Pilot Officers are promoted to the rank of Flying Officer:—
L. C. Lewis, C. G. M. Anderson; May 15. R. O. Jones; Aug. 3. H. T. R. Cripps (2nd Lieut., Queen's Bays Regt., R.A.R.O.), P. Cranswick, M.C., G. H. Jennings-Bramly, J. F. Nicholas, P. P. Grey, F. F. Wilkinson; Aug. 14. G. R. A. Pallin; Aug. 31. W. J. Brett (Lieut., 51st (West. and Cumb.) Field Bde., T.A., Lieut. R. of O.); Sept. 3. T. H. Finney, R. K. Coupland; Sept. 14.

The following are placed on the retired list at their own request:—Sqn.-Ldr. B. H. N. H. Hamilton, D.S.O.; Aug. 5. Flying Officer W. J. Bray; Sept. 16.

The following Flying Officers are transferred to the Reserve, Class A:—
W. R. K. Atkinson; Aug. 28. C. H. Bird; Sept. 15. Flying Officer J. A. Stedman relinquishes his short service commn. on account of ill-health, and is permitted to retain his rank; Aug. 18. Flying Officer J. U. McKinnon resigns his short service commn., and is permitted to retain his rank; Sept. 1. Flying Officer J. K. Smith (Lieut., Lancs. Fus.) relinquishes his temporary commn. on return to Army duty; Sept. 13.

Medical Branch

F. B. C. L. B. Crawford, M.B., is granted a short service commn. as a Flying Officer for three years on the active list, with effect from, and with

seniority of, Aug. 25. Flight-Lieut. F. E. Johnson is promoted to the rank of Squadron-Leader; Sept. 14. Flying Officer L. P. McCullagh, M.B., is promoted to the rank of Flight-Lieut.; Sept. 7. Flight-Lieut. J. S. Wilson, M.D., B.A., is transferred to the Reserve, Class D.2; Sept. 12.

Reserve of Air Force Officers

E. Busby is granted a commn. in Class AA, General Duties Branch, as a Pilot Officer on probation; Sept. 1.

The following Pilot Officers are promoted to the rank of Flying Officer:—
F. H. Pidgeon; June 10. C. S. Clarke; June 23. R. P. Whyte; July 6. W. Lowry; July 10. E. F. D. Gregory; July 11. E. T. Shone; July 13. A. B. H. Youell; July 20. W. R. Bailey; July 22. G. J. Holdcroft; July 27. A. D. M. Blair; Aug. 1. E. H. Rossington; Aug. 5. A. L. Robinson; Aug. 5. L. C. Hillman; Aug. 10. S. J. Wheeler; Aug. 19. E. H. Bird; Aug. 26. W. Rogers; Aug. 26. R. J. Bunning; Sept. 2. F. Dismore; Sept. 4. J. Hall; Sept. 4. A. J. C. Overal; Sept. 4. F. G. Sinclair; Sept. 7.

Flying Officer H. V. Stammers, D.F.C., is confirmed in rank; Sept. 10. Sqn.-Ldr. C. E. C. Rabagliati, M.C., A.F.C., is transferred from Class A to Class C; Sept. 15. Flying Officer R. A. Seaton resigns his commn.; Sept. 2.

Memoranda

181294 Cadet C. R. D. Shannon is granted an honorary commn. as a Second Lieutenant, with effect from the date of his demobilisation. The permission granted to 2nd Lieut. E. H. Wall to retain his rank is withdrawn on his enlistment in the Territorial Army; April 29.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Flight Lieutenants: W. N. Cumming, to R.A.F. Depot, Uxbridge, on transfer to Home Estab.; 20.8.25. P. J. Clayson, M.C., D.F.C., to No. 23 Sqn., Henlow; 9.7.25.

Flying Officers: F. W. W. Wilson, to R.A.F. Base, Gosport; 14.9.25. W. D. Gairdner, D.F.C., to 461 Flight, Gosport; 14.9.25. J. Turner, to No. 1 Sch. of Tech. Training (Boys), Halton; 10.9.25. B. I. Carter, to No. 1 Sch. of Tech. Training (Boys), Halton; 25.9.25. V. H. Clift, to No. 481 Flight, Malta; 1.9.25. A. Leslie-Moore, to No. 462 Flight, Gosport; 14.9.25. T. J. Woods, to R.A.F. Depot, Uxbridge, on transfer to Home Estab.; 28.8.25.

Pilot Officer E. H. Fielden, to No. 23 Sqn., Henlow; 9.7.25.

Stores Branch

Flight Lieutenant A. J. Roberts, to Aircraft Depot, Iraq; 1.9.25.
Flying Officers: W. A. Kyte, to Central Flying Sch., Upavon; 24.9.25. R. V. Robinson, O.B.E., to Supply Depot, Iraq; 25.8.25.

Medical Branch

Squadron Leader: T. Montgomery, M.D., D.P.H., B.A., to R.A.F. Depot, Uxbridge; 1.10.25.

Flight Lieuts.: (Hon. Squadron Leader) E. Brown, to No. 100 Squadron, Spittlegate; 4.9.25. J. Prendergast, to Central Flying School, Upavon; 5.9.25. J. J. Boyle (Dental), to R.A.F. Depot, Uxbridge, on transfer to Home Establishment; 7.10.25.

Flying Officers: T. V. O'Brien, M.B., to No. 208 Squadron, Egypt; 27.8.25. A. Harvey, M.B., to No. 4 Flying Training School, Egypt; 27.8.25.

Flying Officers: W. J. Hutchinson, M.B., to R.A.F. Depot, Uxbridge, on transfer to Home Estab.; 22.8.25. J. McM. Wilder, to R.A.F. Depot, Uxbridge; 15.9.25. F. B. C. L. B. Crawford, M.B., to Marine Aircraft Experimental Estab., Felixstowe; 15.9.25. H. G. Maguire, to R.A.F. Depot, Uxbridge; 15.9.25.

NAVAL APPOINTMENT.

The following appointment was made by the Admiralty on September 12:—
Royal Air Force

Flying Officer F. E. Bond, to No. 461 (F. Torpedo Flight); Sept. 15.

Squad-Ldr. Maurice Wright Joins Fairey's

SQUADRON-LEADER MAURICE E. A. WRIGHT, who is well known to many of our readers in connection with his gliding experiments with Mr. Ogilvie's Wright (Orville and Wilbur type) glider at Eastchurch many years ago, has left the R.A.F., and has joined the board of the Fairey Aviation Co., Ltd. He entered the flying service in 1914, and put in some good work during the War, especially in the Mediterranean zone with Air-Commodore (then Commander) Sampson. After being invalided home, he was at the Air Ministry, and was appointed test pilot for seaplanes, eventually becoming chief technical officer at the Felixstowe seaplane experimental station. Maurice Wright, it will be remembered, made the first flight in this country on a light 'plane when he flew the English Electric Co.'s "Wren" in 1923. Here's best wishes for his future civilian activities.

Salute for Air Council

An addition to the King's Regulations provides that the Air Council, when travelling in a corporate capacity, and the Secretary of State for Air, when visiting a station officially, shall receive the same salutes as the Army Council and Secretary of State for War respectively.

Civilian Air Squadron

ON October 16 Sir Samuel Hoare, Secretary of State for Air, will address a meeting of citizens in the Lincoln Guildhall to explain the scheme for the formation of a Special Reserve Squadron of Home Defence from civilians in the district. These will be trained at Waddington Aerodrome, and the Squadron will consist of a nucleus of R.A.F. officers and mechanics, and two-thirds civilians.

Territorial Air Force

Good progress is being made with the scheme of forming a Territorial Air Force as part of the air defence programme sanctioned by the Government in 1923. Lord Edward Grosvenor—well known as an enthusiast in aeronautical matters—is to command the first squadron to be formed, No. 600 City of London (Bombing) Squadron, Auxiliary Air Force. Two other squadrons will be formed this year, No. 603, at Turnhouse Aerodrome, Edinburgh, commanded by Major J. McKelvie, and another at Renfrew Aerodrome, Glasgow.

Courses for R.A.F. Officers

THE following officers, who were selected for the Cambridge University course in October, 1923, have successfully passed the course and have qualified for the B.A. degree:—

Mechanical Sciences Tripos.—Flight-Lieut. C. E. W. Lockyer, Class II; Squadron-Leader E. L. Howard-Williams, M.C., Class III; Flying-Officer H. A. Haines, D.F.C., ordinary degree.

Engineering II (Course for Ordinary Degree).—Flight-Lieut. C. H. Awcock, O.B.E.

Flight-Lieut. C. E. W. Lockyer has been awarded the John Bernard Seeley Prize for Aeronautics for the year 1925.

Each of the following officers who were selected for the Imperial College of Science and Technology, Course "C," in October, 1924, has presented to the Board of Studies of the Imperial College a thesis which has been accepted for the award of the Diploma of the Imperial College for Advanced Study and Research:—

Squadron-Leader H. Gordon-Dean, A.F.C., and Flying-Officer H. E. Falkner.

R.A.F. Flying Accidents

THE Air Ministry regrets to announce that, as a result of an accident at Sealand, Chester, to a Bristol fighter of No. 5 Flying Training School, Sealand, on September 14, Pilot-Officer William Langdon Spurway, the pilot and sole occupant of the aircraft, was severely injured and died later in the day.

As a result of an accident near Digby to a Bristol fighter of No. 2 Flying Training School, Digby, on September 16, Pilot-Officer Frederick Martin Kellaway, the pilot of the aircraft, was killed, and Flying-Officer William Cay Williams was severely injured and died shortly afterwards.

As a result of an accident near Antrim, Ireland, to an Avro of No. 502 Squadron Aldergrove on September 21, Flying Officer Henry Collins Evans, the pilot of the aircraft, died of injuries on admission to hospital.

No Sunday London-Paris Air Mails

It is reported that Imperial Airways and the French air line companies have agreed that during the winter months the air service between London and Paris shall be suspended as from October 1.

AIR POST STAMPS

By DOUGLAS B. ARMSTRONG.

Extraordinary British Mail Flight.

SPECIAL air mail flights are so infrequent in this country that exceptional interest attaches to a private service organised by the *Torbay Herald*, between Newquay and Torquay, on July 15, when a bag of about 50 letters was carried by Flying Officer P. Phillips, D.F.C., with the sanction of the Air Ministry. Leaving Newquay at 11 o'clock, the mails were dropped at Widcombe Farm, Marldon, Torquay, an hour later, and thence conveyed by motor to the Torquay Post Office. Two special cachets were applied to the mail, one in violet reading "By Aeroplane First Trip, July 15, 1925," and the other in black, inscribed "By first Air Mail Newquay to Torquay, July 15, 1925." Six of the letters were autographed by the pilot.

Royal Air Post Collector

H.R.H. THE PRINCE OF WALES, whose philatelic predilections are well known, is apparently a convert to the more modern cult of air post collecting. According to an American journal he has lately added to his collection a cover flown from Bermuda to Lakehurst, N.J., by the dirigible "Los Angeles" on the first trip in May last.

"Shenandoah" Covers

THE disaster to the great American airship "Shenandoah" has created a renewed demand for air post letters carried by the ill-fated dirigible on her first flight from Lakehurst to Seattle, Wash., on October 8, 1924. Only a limited number of covers were flown, each of which was endorsed with a violet cachet in four lines, reading:—

First Trip U.S.S. "Shenandoah."
Naval Air Station, Lakehurst, N.J.
To Camp Lewis,
Seattle, Wash.

The last mail flight made by the "Shenandoah" was on July 4 of this year (1925), when a bag of 200 letters was carried to the Governor's Conference at Poland Springs.

Canada's First Air Mail

UNTIL quite recently very little has been known concerning the first Canadian air mail flight, which took place between Montreal and Toronto as far back as June 24, 1918. This is not surprising, since only a score or so of missives are believed to have been transmitted on this occasion, most of which were of an official character. Two of the very scarce flown covers belonging to this flight have been shown me by Mr. Alan Turton, the air post specialist, who has been fortunate enough to acquire them. They bear the imprint of a triangular cachet in red, inscribed "Inaugural Service by Aerial Mail—Montreal, 24.6.18."

The flight was made by Capt. Bryan Peck, R.A.F., who left the Polo Ground at Bois France (Montreal) at 10.15 a.m. on June 24, 1918, reaching Lakeville Camp (Toronto) at 4.55 in the afternoon. The mail, consisting chiefly of messages of greetings from leading citizens of Montreal to friends in Toronto, was enclosed in a special bag which was loaded and sealed by the Hon. Secretary of the Aerial League of the British Empire, under whose auspices the event was arranged.

Swiss-Italian Air Mail

SOMETHING like 4,800 letters were sent by the first air mail between Switzerland and Italy on August 1, 1925. A special rectangular cachet was provided for the occasion lettered "Lausanne-Milan 1er Aout 1925, 1er Avion postal Suisse-Italie." Another flight took place between Zurich and Milan on September 4, when flown covers were endorsed "1st Flugpost Zurich-Mailand." Owing to bad weather the service was suspended on September 9, 1925.

Venezuela-Colombia Air Post

THE regular air post service operated in the South American State of Colombia since 1920 by the Sociedad Colombo de Transportes Aereos has now been extended to the neighbouring republic of Venezuela, as from June 1, 1925. When prepaid with Venezuelan stamps in addition to those of the Air Transport Company letters are conveyed direct from La Guera to Bogota and *vice versa* by aeroplane, thus saving several days in transit. Colombian aero stamps used in this service are distinguished by their being over-printed with a large capital "V."

Polish Air Stamps Imminent

As previously foreshadowed in this column, Poland is about to introduce an official set of air post stamps in a design which depicts an aeroplane encircling the Castle of Warsaw.

SIDE-WIND

THE wonderful speed records recently established by the French pilot Lasne have already been recorded in *FLIGHT*. It may be of interest to note, however, that the Nieuport-Delage 42 machine (450 Hispano-Suiza), on which Lasne put up these records, was fitted with the famous Lamblin radiators—which have thus once again proved their efficiency.

PUBLICATIONS RECEIVED

Technical Report of the Aeronautical Research Committee for 1923-24.—Vol. 1, Aerodynamics (Model and Full Scale); Vol. 2, Scale Effect, Materials, Compasses, Engines, etc. H.M. Stationery Office, Kingsway, London, W.C. 2. Price, each volume, £1 2s. 6d. net.

Rendiconti Tecnici della Direzione Superiore del Genio e delle Costruzioni Aeronautiche. August, 1925. Viale Giulio Cesare, Rome.

Caratteristiche Aerodinamiche di Ali. Fascicolo IV and V. *Allegato al Notiziario Tecnico.* Commissariato dell'Aeronautica, Rome.

Rhymes of the R.A.F. By Cecil L. M. Brown. Methuen and Co., Ltd., 36, Essex Street, London, W.C. Price 2s. net.

Aeronautical Research Committee, Reports and Memoranda: No. 932 (Ae. 153).—Experiments on a Model of a Bristol Fighter Aeroplane: Section 1. Force and Moment Measurements at Various Angles of Yaw. By H. B. Irving. Section 2. Lateral Derivatives by the Forced Oscillation Method. By R. A. Frazer. October, 1924. Price 2s. net.

No. 947 (Ae. 167).—The Interference of Wind Channel Walls on the Downwash Angle and the Tail—Setting to Trim. By H. Glauert and A. S. Hartshorn. November, 1924. Price 6d. net. No. 959 (M. 28).—A Method of Improving the Properties of Aluminium Alloy Castings. By S. L. Archbutt. December, 1924. Price 1s. net. H.M. Stationery Office, Kingsway, London, W.C. 2.

NEW COMPANY REGISTERED

YORKSHIRE AEROPLANE CLUB, LTD.—Capital £500, in £1 shares. Objects:—To promote, assist, and encourage aerial navigation in all its forms and the study of aeronautics, also the development of all sciences connected therewith, and the construction of aerial conveyances of all kinds, etc. First directors are to be appointed by the company. Secretary, J. F. Barnes. Solicitor, A. Masser, 7, Park Square, Leeds.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

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20,623. C. F. JEANSEN and E. F. STONE. Aeroplane launching devices or catapults. (239,044.)
25,578. M. A. MAZADE. Indicating and controlling device for maintaining the stability of aircraft. (225,193.)

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